

Appl. No.: 10/026,121
Amdt. Dated: 06/17/2005
Off. Act. Dated: 03/17/2005

Amendments to the Claims:

This listing of claims will replace all prior versions, and listings, of claims in the application:

Listing of Claims:

Claims 1-18 (canceled)

19. (currently amended): ~~Apparatus~~ An apparatus for collecting and converting radiant energy, comprising:

~~a plurality of spaced apart~~ non-transparent linear reflective elements, said linear reflective elements incorporated in at least one array;

each said linear reflective element having longitudinal ends;

each said linear reflective element having a mirrored surface;

each said linear mirrored surfaces surface having a generally concave transversal ~~profile~~ profile; ~~front longitudinal ends and opposing rear longitudinal ends being generally inclined toward one another;~~

wherein at least a substantial part of said mirrored ~~surfaces~~ being surface of each said linear reflective element is designed and positioned to reflect incident radiant energy that impinges upon said mirrored ~~surface~~ surfaces from the side of said front longitudinal ends into a plurality of convergent beams beam;

wherein said array of said linear reflective elements is configured to and direct, by means of single stage specular reflection, said plurality of said convergent beams from said linear reflective elements by means of a specular reflection to a plurality of preselected converging directions through spaces between adjacent pairs of said linear reflective elements; and

wherein said linear reflective elements are discrete elements which are unjoined along their rear longitudinal ends.

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20. (currently amended): ~~The apparatus of~~ An apparatus as recited in claim 19, further comprising:

an elongated energy receiving means for receiving said convergent beams from said linear reflective elements, said energy receiving means disposed in energy receiving relation to each of said mirrored surfaces ~~so that said~~ whereby convergent energy beams reflected from two or more adjacent mirrored surfaces at least partially superimpose on one another on said energy receiving means.

21. (currently amended): ~~The apparatus of~~ An apparatus as recited in claim 20, wherein said energy receiving means is positioned according to a relation: $\beta < 90^\circ$ where β is an angle between the direction to the source of said radiant energy and direction to a point at said mirrored surfaces taken at a point of the energy receiving surface of said energy receiving means.

22. (currently amended): ~~The apparatus of~~ An apparatus as recited in claim 20, wherein said energy receiving means comprises at least one photovoltaic cell having a working area facing toward said mirrored surfaces and the source of said radiant energy.

23. (currently amended): ~~The apparatus of~~ An apparatus as recited in claim 22, further comprising at least one heat sink which is in heat exchange relation with said photovoltaic cell.

24. (currently amended): ~~The apparatus of~~ An apparatus as recited in claim 20, wherein said energy receiving means comprises at least one fluid-carrying tube of a solar heat collector.

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25. (currently amended): ~~The apparatus of~~ An apparatus as recited in claim 20, wherein said energy receiving means is mechanically separated from said plurality of said mirrored surfaces reflective elements.

26. (canceled)

27. (currently amended): ~~The apparatus of~~ An apparatus as recited in claim 19, each said mirrored surface having a slope wherein the slopes of all said mirrored surfaces are defined so that angles of incidence α of said radiant energy on said mirrored surfaces have particular values more surface are greater than 45° and less than 90°.

28. (currently amended): ~~The apparatus of~~ An apparatus as recited in claim 19, wherein one or more said mirrored surfaces reflective elements is disposed in any one of a translated, a reversed and/or a rotated orientation relatively to the others having the same basic arrangement.

29. (canceled)

30. (currently amended): ~~The apparatus of~~ An apparatus as recited in claim 19; wherein said mirrored surfaces are designed and positioned to minimize screening and shadowing on other mirrored surfaces~~[[.]]~~; and

wherein ~~the~~ a front end of an inner mirrored surface and ~~the~~ a rear end of an adjacent outer mirrored surface are aligned relatively to each other with respect to the incident flux; and

wherein the rear end of said inner mirrored surface is disposed out of the path of energy rays reflected from the front end of said outer surface.

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31. (currently amended): ~~The apparatus of~~ An apparatus as recited in claim 19, wherein at least one of said transversal profiles ~~is~~ comprises a segment of conical section curve.

32. (currently amended): ~~The apparatus of~~ An apparatus as recited in claim 31, wherein said segment is parabolic.

33. (currently amended): ~~The apparatus of~~ An apparatus as recited in claim 31, wherein said segment is circular.

34. (currently amended): ~~The apparatus of~~ An apparatus as recited in claim 19, wherein ~~the shape of~~ at least one of said transversal profiles ~~is~~ has a shape represented by a function selected from the group consisting of a polynomial function of at least second order, a parametric curve, and a spline tailored to provide a desired irradiance distribution on said energy receiving means.

35. (currently amended): ~~The apparatus of~~ An apparatus as recited in claim 19, wherein at least one of said transversal profiles comprises a set of conjugated lines selected from the group consisting of straight, parabolic, circular, elliptical, and hyperbolic segments.

36. (currently amended): ~~The apparatus of~~ An apparatus as recited in claim 19, further comprising at least one axle support means for positioning said at least one array of said ~~mirrored surfaces~~ reflective elements according to the movement of source of said radiant energy.

37. (currently amended): ~~The apparatus of~~ An apparatus as recited in claim 19, further comprising:

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support means for supporting said plurality of said ~~mirrored surfaces~~ reflective elements; and

said support means arranged so that said mirrored surfaces can be individually adjusted by rotating around their respective longitudinal axes and/or moving relatively to one another.

38. (currently amended): ~~The apparatus of~~ An apparatus as recited in claim 20, wherein said ~~mirrored surfaces~~ reflective elements are arranged in two or more arrays that can be individually tilted, rotated, and positioned differently relatively to each other and said energy receiving means.

39. (currently amended): ~~The apparatus of~~ An apparatus as recited in claim 19, wherein at least one of the linear ~~mirrored surfaces~~ reflective elements comprises a composite of linear planar reflectors extending parallel to said mirrored surfaces and having ~~the~~ a same basic orientation thereby forming said generally concave transversal profile.